In the claims:

1. (currently amended) A magnetic sensor system, comprising:

magnetoresistive XMR sensor elements (5, 6) that are sensitive to magnetic fields, ~~the~~ electrical properties of said sensor elements being modifiable according to a magnetic field that can be influenced by a mobile, passive transmitter element (8),

wherein the magnetic sensor system (1) has the two magnetoresistive XMR sensor elements (5, 6) in a gradiometer system, each of which is assigned to one of two permanent magnets (2, 3) having a predetermined separation (a) so that a homogenous magnetic field does not induce a bridge signal of a measuring bridge of a magnetic field of the gradiometer system, while a variation of the magnetic field produces a bridge signal~~, wherein the two sensor elements are positioned symmetrically to a central axis between the two permanent magnets~~; and wherein in terms of dimensions, separation and position relative to the magnetoresistive XMR sensor elements (5, 6), the permanent magnets (2, 3) are located such that an ~~the~~ offset of the output signal of the sensor elements (5, 6) in the gradiometer system is minimized, wherein the two magnetoresistive XMR sensor elements are positioned symmetrically to a central axis between the two permanent magnets.

2. (previously presented) The magnetic sensor system as recited in Claim 1, wherein at least one homogenizing plate (7) is located between the sensor elements (5, 6) and the permanent magnets (2, 3).

3. (previously presented) The magnetic sensor system as recited in Claim 1, wherein the magnetization of each of the permanent magnets (2, 3) is rotated by a specified angle (α) relative to their longitudinal direction facing the sensor elements (5, 6).

4. (currently amended) The magnetic sensor system as recited in Claim 1, wherein the magnetic sensor system (1) is ~~used to detect~~configured for detecting the angle of rotation of a wheel (8) serving as a transmitter element, the wheel (8) being equipped, on its circumference, with teeth (9) for influencing the magnetic field in the region of the magnetic sensor system (1).

5. (previously presented) The magnetic sensor system as recited in Claim 4, wherein the wheel (8) is a steel wheel.

Claim 6 cancelled.